CLAIMS

1. A metal halide lamp comprising an arc tube that includes:

a translucent ceramic envelop having a central tube having an inner diameter of 5.5 mm or more and two thin tubes respectively connected to each end of the central tube via joining portions, and enclosing therein at least a rare earth halide; and

electrode inductors, each of which (1) has an electrode formed at a tip end thereof, (2) is inserted into one of the thin tubes with a clearance gap provided between the electrode inductor and the thin tube so that the electrode is disposed in a space surrounded by the central tube and the joining portions, and (3) is sealed in the thin tube at an end thereof opposite a central tube side, wherein

in a cross section of the envelope along a plane including an axis in a longitudinal direction of the arc tube, an angle α formed by each straight-line section of an inner surface of the central tube and a straight-line section of an inner surface of a respective one of the joining portions is in a range of 85° to 115°, and

a curvature radius of an inner surface of each boundary region between the central tube and the joining portions is in a range of 0.5 mm to 2.5 mm.

2. A metal halide lamp comprising an arc tube that includes:

a translucent ceramic envelop including a central tube having an inner diameter of 5.5 mm or more and two thin tubes

respectively positioned on each end of the central tube via joining portions, and enclosing therein at least a rare earth halide; and

electrode inductors, each of which (1) has an electrode formed at a tip end thereof, (2) is inserted into one of the thin tubes with a (clearance) gap provided between the electrode inductor and the thin tube so that the electrode is disposed in a space surrounded by the central tube and the joining portions, and (3) is sealed in the thin tube at an end thereof opposite a central tube side, wherein

in a cross section of the envelope along a plane including an axis in a longitudinal direction of the arc tube, an angle α formed by each straight-line section of an inner surface of the central tube and a straight-line section of an inner surface of a respective one of the joining portions is in a range of 85° to 115°, and

a taper section is formed on an inner surface of each boundary region between the central tube and the joining portions, and in the cross section, a length of line segment AC and a length of line segment BC are respectively in a range of 0.5 mm to 2.5 mm when a boundary point between the inner surface of the central tube and the taper section is a point A, a boundary point between the inner surface of the respective one of the joining portions and the taper section is a point B, and an intersecting point of a straight line extending from the straight-line section of the inner surface of the central tube with a line extending perpendicularly from the point B toward the straight line is a point C.

3. The metal halide lamp of one of Claims 1 and 2, wherein an alkaline earth metal halide is enclosed in the envelope.

4. The metal halide lamp of one of Claims 1 and 2, wherein when a projection length of the electrode is E (mm) and a minimum wall thickness of each boundary region between the joining portions and the thin tubes is t_b (mm), each value for the projection length E and the minimum wall thickness t_b is found within an area defined by lines connecting four points of (E, t_b) = (0.5, 1.0), (0.5, 3.5), (5.0, 3.5), and (5.0, 0.5).

5. The metal halide lamp of one of Claims 1 and 2, wherein the envelope is fabricated by integrally forming the central tube, the joining portions, and the thin tubes.

6. A metal halide lamp comprising an arc tube including an envelope which is a translucent ceramic tube having a main tube in a center thereof and a pair of thin tubes on each side of the main tube, a light emitting material being enclosed in the envelope, wherein

the light emitting material contains at least one rare earth metal halide selected from the group consisting of thulium (Tm), holmium (Ho) and dysprosium (Dy) along with a calcium halide having a composition ratio in a range of 5 mole % to 65 mole % to all metal halides enclosed in the envelope, and

$p/36 \leq t_n < 1.5$ is satisfied, where t_n is a wall thickness (mm) of each thin tube and p is a bulb wall loading (W/cm^2) at

time when the metal halide lamp is lit.

7. The metal halide lamp of Claim 6, wherein

a rounded-off portion having a curvature radius in a range of 0.5 mm to 3.0 mm is formed at a corner of each boundary between the main tube and the thin tubes, facing a discharge space.

8. The metal halide lamp of Claim 6, wherein

a corner of each boundary between the main tube and the thin tubes, facing a discharge space, is processed to form a chamfer having respective dimensions in a direction parallel to an axis of the envelope and in a direction perpendicular to the axis in a range of 0.5 mm to 3.0 mm.

9. The metal halide lamp of one of Claims, 6, 7 and 8, wherein

the light emitting material further contains at least one metal halide selected from the group consisting of cerium halides and praseodymium halides, having a composition ratio in a range of 0.5 mole % to 10 mole % to all metal halides enclosed in the envelope.

10. The metal halide lamp of Claim 6, wherein

the envelope is fabricated by integrally forming the main tube and the thin tubes.

11. A luminaire comprising:

a metal halide lamp recited in one of Claims 1, 2 and 6;

a light fitting housing the metal halide lamp; and

a lighting circuit for lighting the metal halide lamp.